Features

·Freq: DC- 20.0 GHz

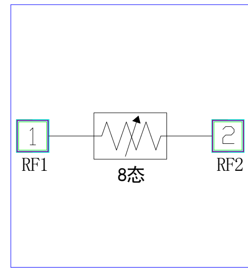
·Insertion Loss: 0.8 dB

·Attenuation Range: 0/0.5/1.0/ 1.5/2.0/2.5/3.0/3.5dB

·RF1/RF2 Stationary Wave:1.4/1.4

·Die Size: 0.75×0.8×0.1mm³

Functional Diagram



Generation Description

The MC17942 is a 8 state, 0.5 dB step attenuator working at DC-20 GHz with a typical insertion loss of 0.8 dB. The chip mainly adjusts the attenuation state by means of wire bonding.

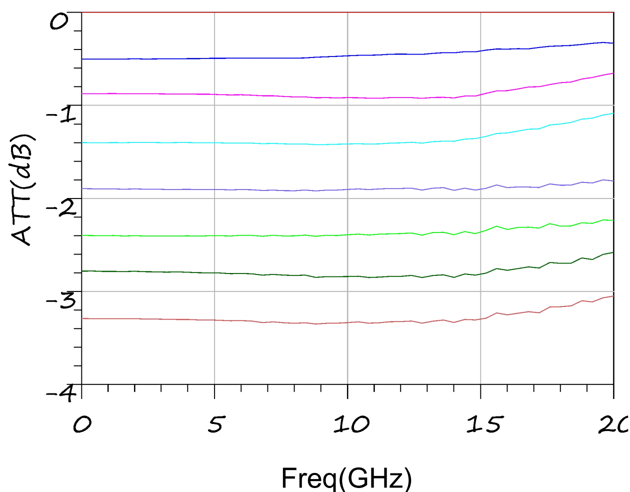
The chip applies the on-chip Metallization through-hole technology thus no need for additional grounding measures which makes it very easy and convenient to use. The backside of the chip is metallized, suitable for conductive adhesive bonding or eutectic mounting process.

Electrical Specification (T_A=+25℃，50Ω system)

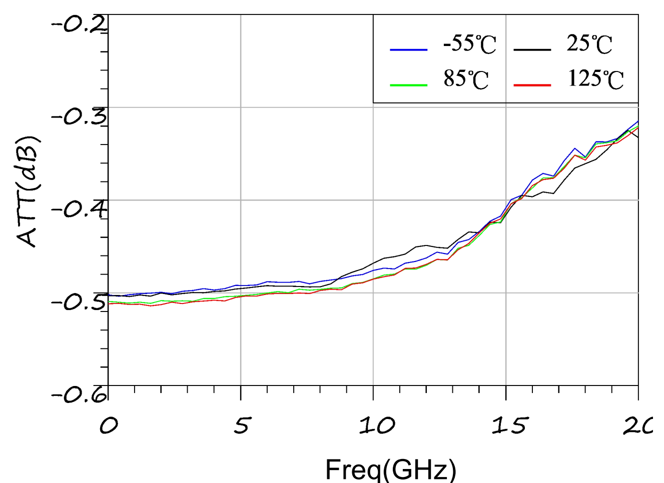
Parameter		Function	Min.	Typ.	Max.	Units
Frequency Range		Freq	DC	-	20.0	GHz
Insertion Loss		IL	-	0.8	-	dB
Attenuation Range		△IL	0/0.5/1.0/1.5/2.0/2.5/3.0/3.5			dB
Attenuation Accuracy	0.0			0.1		dB
	0.5	-	-	0.3	-	dB
	1.0	-	-	0.8	-	dB
	1.5	-	-	1.4	-	dB
	2.0	-	-	1.9	-	dB
	2.5	-	-	2.4	-	dB
	3.0	-	-	2.8	-	dB
	3.5	-	-	3.3	-	dB
RF1 Stationary Wave		VSWR	-	1.4	-	-
RF2 Stationary Wave		VSWR	-	1.4	-	-

[1] The chips are 100% DC and RF tested.

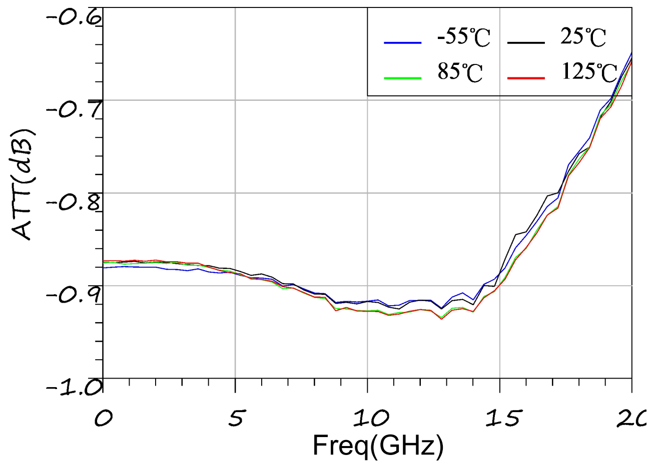
Typical Testing Characteristics



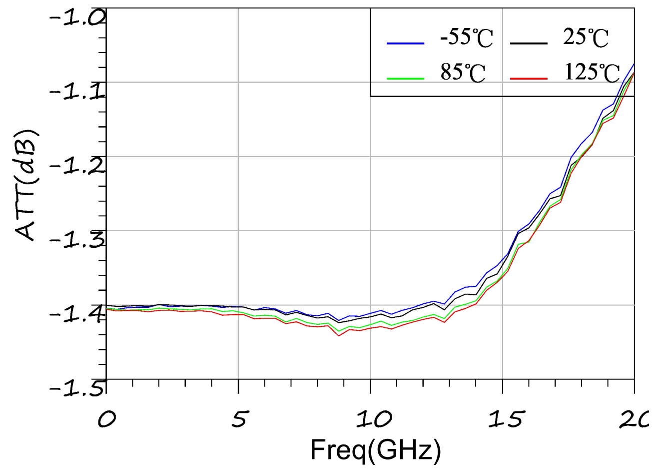
Different Attenuation States vs Frequency



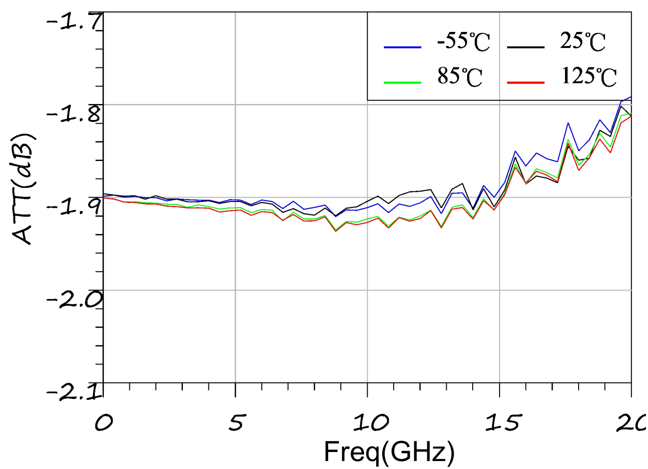
0.5dB Attenuation State vs Frequency



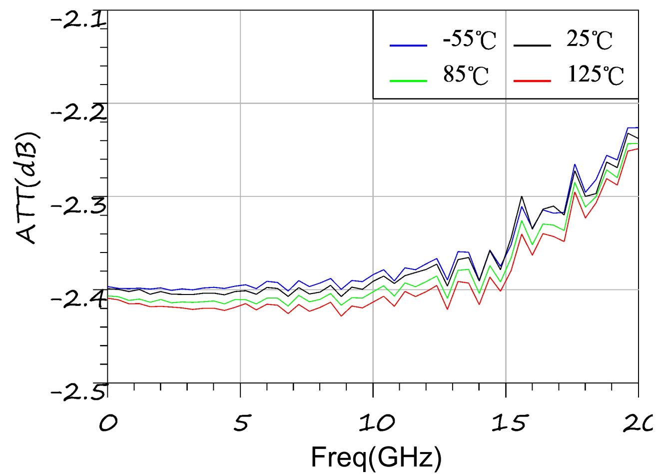
1.0dB Attenuation State vs Frequency



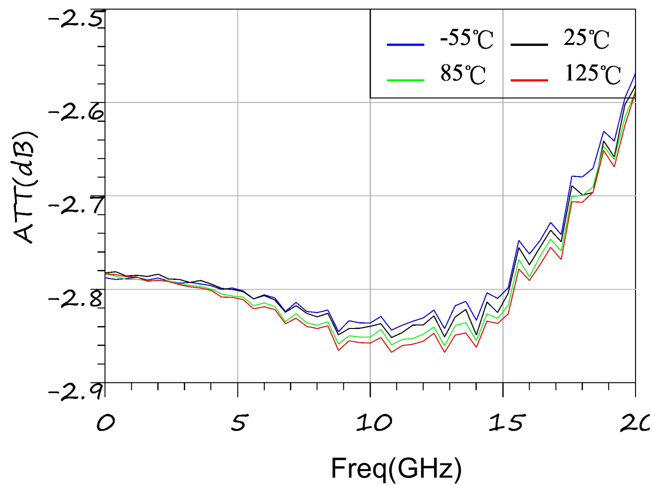
1.5dB Attenuation State vs Frequency



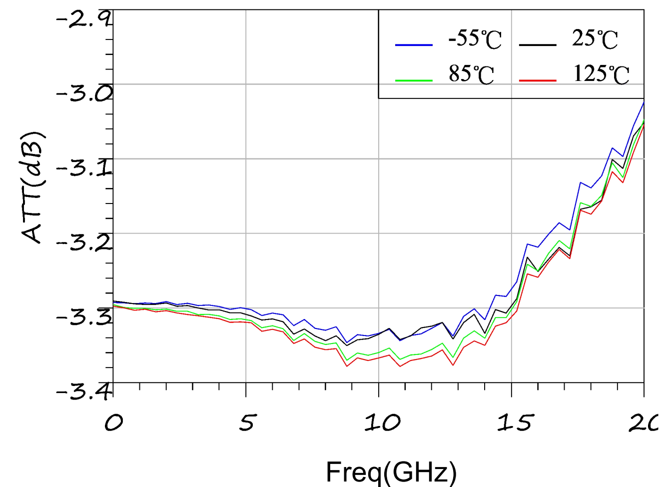
2.0dB Attenuation State vs Frequency



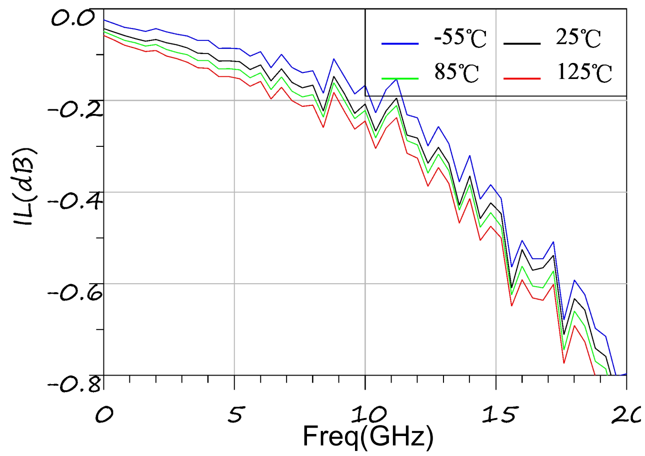
2.5dB Attenuation State vs Frequency



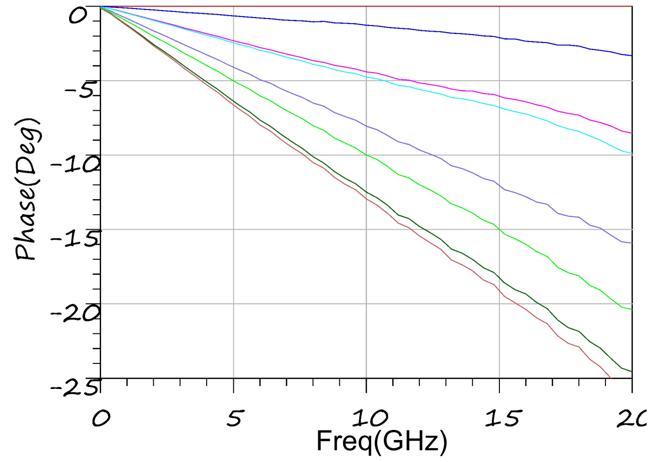
3.0dB Attenuation State vs Frequency



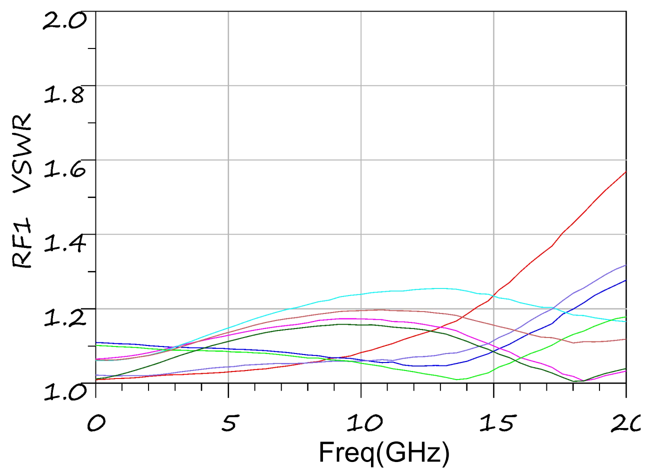
3.5dB Attenuation State vs Frequency



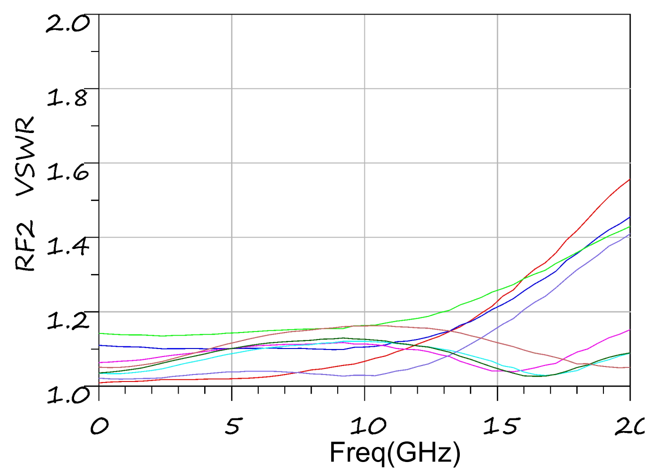
Insertion Loss vs Frequency



Additional Phase Shift vs Frequency



RF1 Stationary Wave vs Frequency



RF2 Stationary Wave vs Frequency

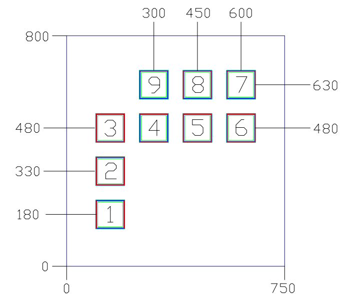
Absolute Maximum Ratings

Parameter Limits	Value
Input Power, 50Ω	23dBm
Storage Temperature Range	-65~+150℃
Operating Temperature Range	-55~+125℃
Mounting Temperature (30s, N_2 protection)	300℃
Exceeding the above conditions may cause permanent damage to the chip.	

This product is ESD(Electrostatic discharge) sensitive. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

·Assembling in a clean environment
·Avoiding rapid temperature changes during the mounting process
·Do not touch the surface or use dry and wet chemical methods to clean the surface
·Using 2 bonding wires (shaped as figure 八) for input and output, the bonding wires should be as short as possible
·Storing in a dry, N_2 environment

Outline Drawing



Notes:

1. Units:μm
2. Back side metallization: Gold
3. Back side metal is ground
4. Bonding pad size:100μm
5. Outline Dimensional Tolerance: ±50μm

Pad Descriptions

Pad Number	Function	Description
1, 3	RF1	RF signal input, 50Ω matched, Without blocking capacitor inside
6, 7	RF2	RF signal output, 50Ω matched, Without blocking capacitor inside
Die Bottom	GND	Die bottom must be connected to RF/DC ground

Suggested Assembly Drawing

Attenuation \ dB	Bonding Connection		
	Input	Connected Point	Output
0.0	3	-	7
0.5	3	9~4	7
1.0	3	8~5	6
1.5	3	9~4, 8~5	6
2.0	1	2~3	7
2.5	1	2~3, 9~4	7
3.0	1	2~3, 8~5	6
3.5	1	2~3,9~4, 8~5	6